

AMENDMENT(S) TO THE CLAIMS

1-37. (cancelled)

38. (currently amended) A device for applying at least one of liquid and pasty application medium to at least one side of a moving substrate, comprising:

an applicator unit arranged at a distance from the substrate, said applicator unit discharging the application medium onto the substrate as a free application medium jet, said applicator unit being kept at a first predetermined electric potential, the substrate proximate to said applicator unit being kept at a second predetermined electric potential thereby producing an electric field, which exerts a force on said application medium jet as it moves from said applicator unit to the substrate, said force assisting in the movement of said application medium jet, wherein the substrate is one of a surface of a material web and a surface of a transfer roll;

wherein said applicator unit is a curtain applicator unit, said application medium jet being an application medium curtain that discharges the application medium onto the substrate, said application medium curtain moves from said curtain applicator unit to the substrate substantially under the force of gravity;

[[an]] a first electrode arrangement altering an electrical potential of said application medium curtain as it moves to the substrate for attenuating an air boundary layer carried along by said substrate;

a suction box; and

a trailing scraper, said first electrode arrangement being positioned between said suction box and said trailing scraper, said first electrode arrangement, said suction box, and said trailing scraper being positioned on an upstream side of said applicator unit.

39. (cancelled)

40. (currently amended) ~~The device of claim 38,~~ A device for applying at least one of liquid and pasty application medium to at least one side of a moving substrate, comprising:
an applicator unit arranged at a distance from the substrate, said applicator unit discharging the application medium onto the substrate as a free application medium jet, said applicator unit being kept at a first predetermined electric potential, the substrate proximate to said applicator unit being kept at a second predetermined electric potential thereby producing an electric field, which exerts a force on said application medium jet as it moves from said applicator unit to the substrate, said force assisting in the movement of said application medium jet, wherein the substrate is one of a surface of a material web and a surface of a transfer roll;

wherein said applicator unit is a free jet nozzle applicator unit moving said application medium to the substrate substantially by way of expulsion momentum imparted by said free jet nozzle applicator unit;

a first electrode arrangement for attenuating an air boundary layer carried along by said substrate;

a suction box; and

a trailing scraper, said first electrode arrangement being positioned between said suction box and said trailing scraper, said first electrode arrangement, said suction box, and said trailing scraper being positioned on an upstream side of said applicator unit.

41. (currently amended) ~~The device of claim 38, further comprising~~ A device for applying at least one of liquid and pasty application medium to at least one side of a moving substrate, comprising:

an applicator unit arranged at a distance from the substrate, said applicator unit discharging the application medium onto the substrate as a free application medium jet, said applicator unit being kept at a first predetermined electric potential, the substrate proximate to said applicator unit being kept at a second predetermined electric potential thereby producing an electric field, which exerts a force on said application medium jet as it moves from said applicator unit to the substrate, said force assisting in the movement of said application medium jet, wherein the substrate is one of a surface of a material web and a surface of a transfer roll;

wherein said applicator unit is a curtain applicator unit, said application medium jet being an application medium curtain that discharges the application medium onto the substrate, said application medium curtain moves from said curtain applicator unit to the substrate substantially under the force of gravity;

a first electrode arrangement for attenuating an air boundary layer carried along by said substrate;

a suction box;

a trailing scraper, said first electrode arrangement being positioned between said suction box and said trailing scraper; and

[[an]] a second electrode arrangement located on an upstream side of said applicator unit, said second electrode arrangement proximate to said applicator unit and located at a distance from the substrate, said second electrode arrangement being at a third predetermined electrical potential, said second electrode arrangement altering an electrical potential of said application medium curtain as it moves to the substrate, said first electrode arrangement, said suction box, and said trailing scraper being positioned on an upstream side of said second electrode arrangement.

42. (currently amended) A device for applying at least one of liquid and pasty application medium to at least one side of a moving substrate, comprising:

an applicator unit arranged at a distance from the substrate, said applicator unit discharging the application medium onto the substrate as a free application medium jet;

an electrode arrangement located on an upstream side of said applicator unit, said electrode arrangement proximate to said applicator unit and located at a distance from the substrate, said electrode arrangement being at a predetermined electrical potential thereby producing an electric field, which exerts a force on said application medium jet as it moves from said applicator unit to the substrate, said force assisting in the movement of said application medium jet, wherein the substrate is one of a surface of a material web and a surface of a transfer roll;

a floating potential electrode receiving an electrical field from said electrode arrangement and imparting an electric field to the moving substrate, said floating potential electrode for attenuating an air boundary layer carried along by said substrate;

a suction box; and

a trailing scraper, ~~said electrode arrangement~~ floating potential electrode ~~being positioned~~ positioned between said suction box and said trailing scraper, said floating potential electrode, said suction box, and said trailing scraper being positioned on an upstream side of said electrode arrangement.

43. (previously presented) The device of claim 42, wherein said electrode arrangement includes at least one flat electrode having a side with a plurality of at least one of projections and

needle points directed toward the substrate.

44. (previously presented) The device of claim 42, wherein said electrode arrangement includes a plurality of individual electrodes arranged adjacent to one another in a direction transverse to the substrate.

45. (previously presented) The device of claim 42, further comprising an electric field producing device located downstream of said application unit, said electric field producing device producing a force that is exerted on the application medium and directed toward the substrate.

46. (previously presented) The device of claim 45, wherein said predetermined electric potential is a third electrical potential, said application unit being at a first predetermined electric potential, said substrate being at a second predetermined potential, said electric field producing device having an other electrode arrangement adjacent to the substrate, said other electrode arrangement being at a fourth predetermined electric potential.

47. (previously presented) The device of claim 46, wherein at least one of said first predetermined electric potential, said third predetermined electric potential and said fourth predetermined electric potential has an electric potential of between approximately 5kV and approximately 60 kV.

48. (previously presented) The device of claim 47, wherein at least one of said first predetermined electric potential, said third predetermined electric potential and said fourth predetermined electric potential has an electric potential of approximately 30 kV.

49. (previously presented) The device of claim 46, wherein said second predetermined electric potential is at ground potential.

50. (previously presented) The device of claim 45, further comprising:

a backing element being one of in contact with said material web and being said surface of said transfer roll; and

an electrode in contact with said backing element keeping said backing element at said second predetermined electric potential.

51. (previously presented) The device of claim 50, wherein said backing element is in wiping contact with said electrode

52. (previously presented) The device of claim 50, further comprising a bearing shaft, said backing element being a backing roll, said backing roll connected to said bearing shaft, said electrode being in contact with said bearing shaft.

53. (previously presented) The device of claim 46, further comprising an electrode formed as a web guide element, said substrate being said material web kept at said second electrical potential by said web guide element.

54-56. (cancelled)

57. (previously presented) A device for applying at least one of liquid and paste application medium to at least one side of a moving substrate, comprising:

- an applicator unit arranged at a distance from the substrate, said applicator unit discharging the application medium onto the substrate as a free application medium jet;
- an electrode arrangement located on an upstream side of said applicator unit, said electrode arrangement proximate to said applicator unit and located at a distance from the substrate, said electrode arrangement being at a predetermined electrical potential thereby producing an electric field, which exerts a force on said application medium jet as it moves from said applicator unit to the substrate, said force assisting in the movement of said application medium jet, wherein the substrate is one of a surface of a material web and a surface of a transfer roll;
- an attenuating device that attenuates an air boundary layer that is carried along with the substrate upstream of said electrode arrangement, said attenuating device including a suction device; and
- a trailing scraper in wiping contact with the substrate downstream of said suction device.

58. (previously presented) The device of claim 57, further comprising an other electrode arrangement proximate to said attenuation device.

59. (previously presented) The device of claim 58, wherein said suction device has a downstream end, said other electrode arrangement being positioned between said downstream end of said suction device and said trailing scraper.

60. (previously presented) The device of claim 58, wherein said other electrode arrangement includes a plurality of individual electrodes arranged adjacent to one another in a direction transverse to the substrate.

61. (previously presented) The device of claim 58, wherein said other electrode arrangement includes at least one flat electrode having a side with a plurality of at least one of projections and needle points directed toward the substrate.

62. (previously presented) The device of claim 58, wherein said other electrode arrangement has a distance from the substrate of between approximately 2 mm and approximately 30 mm.

63. (previously presented) The device of claim 58, wherein said other electrode arrangement has a floating electrical potential.

64. (previously presented) The device of claim 58, wherein said other electrode arrangement is connected to said attenuation device, said electrode arrangement being electrically insulated from said attenuation device.

65. (previously presented) The device of claim 58, wherein at least one of said applicator unit and said attenuation device is kept at a ground potential.

66. (previously presented) A device for applying at least one of liquid and pasty application medium to at least one side of a moving substrate, comprising:

a curtain applicator unit that discharges the application medium onto the substrate as a curtain, said curtain moving from said curtain applicator unit to the substrate substantially under the force of gravity;

a plurality of edge guiding elements that guide lateral edges of said curtain, at least one of said edge guiding elements having a surface being one of roughened and toothed, wherein the substrate is one of a surface of a material web and a surface of a transfer roll; and

an electrode arrangement altering an electric potential of said curtain as it moves from said curtain applicator unit to the moving substrate, said electrode arrangement including at least one electrode strip positioned substantially parallel with at least one of said plurality of edge guiding elements.

67. (previously presented) The device of claim 66, wherein at least one said guiding element has a wetting angle, which depends on characteristics of the application medium and said surface of said at least one guiding element, said wetting angle being less than 90°.

68. (previously presented) A device for applying at least one of liquid and pasty application medium to at least one side of a moving substrate, comprising:

a curtain applicator unit that discharges the application medium onto the substrate as a curtain, said curtain moving from said curtain applicator unit to the substrate substantially under the force of gravity;

a plurality of edge guiding elements that guide lateral edges of said curtain, at least one of said edge guiding elements having a surface being one of roughened and toothed, wherein the substrate is one of a surface of a material web and a surface of a transfer roll, at least one said guiding element including an external thread; and

at least one electrode strip positioned substantially parallel with at least one of said plurality of edge guiding elements.

69. (previously presented) The device of claim 66 wherein at least one said guiding element is fabricated from one of glass and metal.

70. (previously presented) A device for applying at least one of liquid and paste application medium to at least one side of a moving substrate, comprising:

a curtain applicator unit that discharges the application medium onto the substrate as a curtain, said curtain moving from said curtain applicator unit to the substrate substantially under the force of gravity;

a plurality of edge guiding elements that guide lateral edges of said curtain, at least one of said edge guiding elements having a surface being one of roughened and toothed, wherein the substrate is one of a surface of a material web and a surface of a transfer roll, at least one of said guiding elements being displaceable in a direction transverse to the substrate; and

at least one electrode strip positioned substantially parallel with at least one of said plurality of edge guiding elements.

71. (previously presented) A device for applying at least one of liquid and paste application medium to at least one side of a moving substrate, comprising:

a curtain applicator unit that discharges the application medium onto the substrate as a curtain, said curtain moving from said curtain applicator unit to the substrate substantially under the force of gravity;

a plurality of edge guiding elements that guide lateral edges of said curtain, at least one of said edge guiding elements having a surface being one of roughened and toothed, wherein the substrate is one of a surface of a material web and a surface of a transfer roll, at least one of said guiding elements being angularly adjustable; and

at least one electrode strip positioned substantially parallel with at least one of said plurality of edge guiding elements.

72. (currently amended) ~~The device of claim 66, further comprising~~ A device for applying at least one of liquid and pasty application medium to at least one side of a moving substrate, comprising:

a curtain applicator unit that discharges the application medium onto the substrate as a curtain, said curtain moving from said curtain applicator unit to the substrate substantially under the force of gravity;

a plurality of edge guiding elements that guide lateral edges of said curtain, at least one of said edge guiding elements having a surface being one of roughened and toothed, wherein the substrate is one of a surface of a material web and a surface of a transfer roll; and

an electrode arrangement altering an electric potential of said curtain as it moves from said curtain applicator unit to the moving substrate, said electrode arrangement including at least one electrode strip positioned substantially parallel with at least one of said plurality of edge guiding elements, an electrode said at least one electrode strip proximate to at least one of said guiding elements, said electrode at least one electrode strip kept at a predetermined electric potential.

73. (previously presented) A device for applying at least one of liquid and pasty application medium to at least one side of a moving substrate, comprising:

a curtain applicator unit that discharges the application medium onto the substrate as a curtain, said curtain moving from said curtain applicator unit to the substrate substantially under the force of gravity;

a plurality of edge guiding elements that guide lateral edges of said curtain, at least one of said edge guiding elements having a surface being one of roughened and toothed, wherein the substrate is one of a surface of a material web and a surface of a transfer roll; and

an electrode proximate to at least one of said guiding elements, said electrode kept at a predetermined electric potential, said electrode extending substantially parallel with at least one of said guiding elements.